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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Applicants : Reuven Bakalash et al.  
Application No. : 10/849,501  
Filing Date : May 19, 2004  
Title of Invention : METHOD OF AND APPARATUS FOR DATA  
AGGREGATION UTILIZING A MULTIDIMENSIONAL  
DATABASE AND MULTI-STAGE DATA AGGREGATION  
OPERATIONS  
Examiner : not yet assigned  
Group Art Unit : 2177  
Attorney Docket No. : 122-007USANL0

Honorable Commissioner of Patents  
and Trademarks  
Washington, DC 20231

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 C.F.R. 1.97**

Sir:

In order to fulfill Applicants' continuing obligation of candor and good faith as set forth in 37 C.F.R. 1.56, Applicants submit herewith an Information Disclosure Statement prepared in accordance with 37 C.F.R Sections 1.97, 1.98 and 1.99.

**RELATED USPTO PROCEEDINGS AND FEDERAL ACTIONS**

Applicants bring to the Examiner's attention that Applicants' prior US Patent No. 6,385,604 (assigned to HyperRoll Israel Ltd.) is currently (i) the subject of an ex parte Re-examination Proceeding (Control No. 90/007,326) pursuant to Order Granting Request for Ex Parte Reexamination dated January 12, 2005 (copy attached hereto), and also (ii) the subject of the following two litigations between HyperRoll Israel Ltd. and Hyperion Solutions Corporation:

Hyperion Solutions Corporation v. HyperRoll, Inc. and HyperRoll Israel, LTD, N.D. Cal.,  
Docket No. CA 05/05054 VRW; and

HyperRoll Israel, Ltd. v. Hyperion Solutions Corporation, E.D. Texas,  
Docket No. TX 505 CV 12, (currently transferred to the North District of California).

The disclosures enclosed herewith are as follows:

**U.S. PUBLICATIONS**

<u>NUMBER</u>	<u>FILING DATE</u>	<u>TITLE</u>
6,832,263	April 27, 2001	METHOD AND APPARATUS FOR IMPLEMENTING A DYNAMICALLY UPDATED PORTAL PAGE IN AN ENTERPRISE-WIDE COMPUTER SYSTEM
6,766,325	December 2, 1999	SYSTEM AND METHOD FOR MAINTAINING DATA FOR PERFORMING "WHAT IF" ANALYSIS
6,763,357	June 27, 2000	METHOD FOR DETERMINING THE COMPUTABILITY OF DATA FOR AN ACTIVE MULTI-DIMENSIONAL CACHE IN A RELATIONAL DATABASE MANAGEMENT SYSTEM
6,748,394	April 27, 2001	GRAPHICAL USER INTERFACE FOR RELATIONAL DATABASE
6,732,115	April 27, 2001	CHAMELEON MEASURE AND METRIC CALCULATION
6,662,174	April 17, 2001	ANALYTICAL SERVER INCLUDING METRICS ENGINE
6,643,661	April 27, 2001	METHOD AND APPARATUS FOR IMPLEMENTING SEARCH AND CHANNEL FEATURES IN AN ENTERPRISE-WIDE COMPUTER SYSTEM
6,629,094	September 1, 2000	SYSTEM AND METHOD FOR REWRITING RELATIONAL DATABASE QUERIES
6,601,062	June 27, 2000	ACTIVE CACHING FOR MULTI-DIMENSIONAL DATA SETS IN RELATIONAL DATABASE MANAGEMENT SYSTEM
6,594,672	June 1, 2000	GENERATING MULTIDIMENSIONAL

		OUTPUT USING META-MODELS AND META-OUTLINES
6,587,547	December 7, 1999	SYSTEM AND METHOD FOR THE CREATION AND AUTOMATIC DEPLOYMENT OF PERSONALIZED, DYNAMIC AND INTERACTIVE VOICE SERVICES, WITH REAL-TIME DRILLING VIA TELEPHONE
6,549,907	April 22, 1999	MULTI-DIMENSIONAL DATABASE AND DATA CUBE COMPRESSION FOR AGGREGATE QUERY SUPPORT ON NUMERIC DIMENSIONS
6,535,872	April 8, 1999	METHOD AND APPARATUS FOR DYNAMICALLY REPRESENTING AGGREGATED AND SEGMENTED DATA VIEWS USING VIEW ELEMENT SETS
6,493,728	June 22, 2000	DATA COMPRESSION FOR RECORDS OF MULTIDIMENSIONAL DATABASE
6,484,179	October 25, 1999	STORING MULTIDIMENSIONAL DATA IN A RELATIONAL DATABASE MANAGEMENT SYSTEM
6,477,536	June 22, 1999	VIRTUAL CUBES
6,473,764	October 15, 1999	VIRUTAL DIMENSIONS IN DATABASES AND METHODS THEREFOR
6,434,544	February 28, 2000	STAND-ALONE CARTRIDGE-STYLE DATA AGGREGATION SERVER PROVIDING DATA AGGREGATION FOR OLAP ANALYSES
6,408,292	August 4, 1999	METHOD OF AND SYSTEM FOR MANAGING MULTI-DIMENSIONAL DATABASES USING MODULAR- ARITHMETIC BASED ADDRESS DATA MAPPING PROCESSES ON INTEGER- ENCODED BUSINESS DIMENSIONS
6,405,208	December 13, 1999	DYNAMIC RECURSIVE BUILD FOR MULTIDIMENSIONAL DATABASES

		AND METHODS AND APPARATUS THEREOF
6,397,195	June 3, 1998	SYSTEM FOR MANAGING ACCOUNTING INFORMATION IN A MULTI-DIMENSIONAL DATABASE
6,385,604	August 9, 2000	RELATIONAL DATABASE MANAGEMENT SYSTEM HAVING INTEGRATED NON-RELATIONAL MULTI-DIMENSIONAL DATA STORE OF AGGREGATED DATA ELEMENTS
6,385,301	November 10, 1998	DATA PREPARATION FOR TRAFFIC TRACK USAGE MEASUREMENT
6,374,234	June 22, 1999	AGGREGATION PERFORMANCE ESTIMATION IN DATABASE SYSTEMS
6,330,564	February 10, 1999	SYSTEM AND METHOD FOR AUTOMATED PROBLEM ISOLATION IN SYSTEMS WITH MEASUREMENTS STRUCTURED AS A MULTIDIMENSIONAL DATABASE
6,324,533	May 29, 1998	INTEGRATED DATABASE AND DATA- MINING SYSTEM
6,321,241	July 2, 1998	CROSS TAB ANALYSIS AND REPORTING METHOD
6,317,750	October 26, 1998	METHOD AND APPARATUS FOR ACCESSING MULTIDIMENSIONAL DATA
6,269,393	June 19, 2000	SYSTEM AND METHOD FOR AUTOMATIC TRANSMISSION OF PERSONALIZED OLAP REPORT OUTPUT
6,249,791	May 18, 1999	SUMMARY TABLE MANAGEMENT IN A COMPUTER SYSTEM
6,212,617	June 30, 1998	PARALLEL PROCESSING METHOD AND SYSTEM USING A LAZY PARALLEL DATA TYPE TO REDUCE INTER- PROCESSOR COMMUNICATION

6,212,515 B1	November 3, 1998	METHOD AND APPARATUS FOR POPULATING SPARSE MATRIX ENTRIES FROM CORRESPONDING DATA
6,212,524 B1	May 6, 1998	METHOD AND APPARATUS FOR CREATING AND POPULATING A DATAMART
6,209,036	June 6, 1997	MANAGEMENT OF AND ACCESS TO INFORMATION AND OTHER MATERIAL VIA THE WORLD WIDE WEB IN AN LDAP ENVIRONMENT
6,208,975 B1	June 19, 1997	INFORMATION AGGREGATION AND SYNTHESIZATION SYSTEM
6,205,447	June 30, 1999	RELATIONAL DATABASE MANAGEMENT OF MULTI- DIMENSIONAL DATA
6,189,004 B1	May 6, 1998	METHOD AND APPARATUS FOR CREATING A DATAMART AND FOR CREATING A QUERY STRUCTURE FOR THE DATAMART
6,182,061 B1	April 9, 1998	METHOD FOR EXECUTING AGGREGATE QUERIES, AND COMPUTER SYSTEM
6,182,060	April 8, 1998	METHOD AND APPARATUS FOR STORING, RETRIEVING, AND PROCESSING MULTI-DIMENSIONAL CUSTOMER-ORIENTED DATA SETS
6,173,310 B1	June 30, 1999	SYSTEM AND METHOD FOR AUTOMATIC TRANSMISSION OF ON- LINE ANALYTICAL PROCESSING SYSTEM REPORT OUTPUT
6,163,774	May 24, 1999	METHOD AND APPARATUS FOR SIMPLIFIED AND FLEXIBLE SELECTION OF AGGREGATE AND CROSS PRODUCT LEVELS FOR A DATA WAREHOUSE
6,161,103	May 6, 1998	METHOD AND APPARATUS FOR CREATING AGGREGATES FOR USE IN A

## DATAMART

6,151,601	November 12, 1997	COMPUTER ARCHITECTURE AND METHOD FOR COLLECTING, ANALYZING AND/OR TRANSFORMING INTERNET AND/OR ELECTRONIC COMMERCE DATA FOR STORAGE INTO A DATA STORAGE AREA
6,141,655	September 23, 1997	METHOD AND APPARATUS FOR OPTIMIZING AND STRUCTURING DATA BY DESIGNING A CUBE FOREST DATA STRUCTURE FOR HIERARCHICALLY SPLIT CUBE FOREST TEMPLATE
6,134,541	October 31, 1997	SEARCHING MULTIDIMENSIONAL INDEXES USING ASSOCIATED CLUSTERING AND DIMENSION REDUCTION INFORMATION
6,122,628	October 31, 1997	MULTIDIMENSIONAL DATA CLUSTERING AND DIMENSION REDUCTION FOR INDEXING AND SEARCHING
6,115,705	May 19, 1997	RELATIONAL DATABASE SYSTEM AND METHOD FOR QUERY PROCESSING USING EARLY AGGREGATION
6,108,647	May 21, 1998	METHOD, APPARATUS AND PROGRAMMED MEDIUM FOR APPROXIMATING THE DATA CUBE AND OBTAINING APPROXIMATE ANSWERS TO QUERIES IN RELATIONAL DATABASES
6,064,999	April 15, 1998	METHOD AND SYSTEM FOR EFFICIENTLY PERFORMING DATABASE TABLE AGGREGATION USING A BITMASK-BASED INDEX
6,034,697	December 9, 1997	INTERPOLATION BETWEEN RELATIONAL TABLES FOR PURPOSES OF ANIMATING A DATA VISUALIZATION
6,023,695	October 31, 1997	SUMMARY TABLE MANAGEMENT IN A

## COMPUTER SYSTEM

6,006,216	July 29, 1997	DATA ARCHITECTURE FOR FETCH-INTENSIVE DATABASE APPLICATIONS
6,003,029	August 22, 1997	AUTOMATIC SUBSPACE SLUSTERING OF HIGH DIMENSIONAL DATA FOR DATA MINING APPLICATIONS
5,999,192	April 30, 1996	INTERACTIVE DATA EXPLORATION APPARATUS AND METHODS
5,991,754	December 28, 1998	REWRITING A QUERY IN TERMS OF A SUMMARY BASED ON AGGREGATE COMPUTABILITY AND CANONICAL FORMAT, AND WHEN A DIMENSION TABLE IS ON THE CHILD SIDE OF AN OUTER JOIN
5,987,467	August 15, 1997	METHOD OF CALCULATING TUPLES FOR DATA CUBES
5,978,796	June 30, 1997	ACCESSING MULTI-DIMENSIONAL DATA BY MAPPING DENSE DATA BLOCKS TO ROWS IN A RELATIONAL DATABASE
5,978,788	April 14, 1997	SYSTEM AND METHOD FOR GENERATING MULTI-REPRESENTATIONS OF A DATA CUBE
5,963,936	June 30, 1997	QUERY PROCESSING SYSTEM THAT COMPUTES GROUING SETS, ROLL-UP, AND CUBE WITH A REDUCED NUMBER OF GROUP BYS IN A QUERY GRAPH MODEL
5,940,822	August 29, 1997	ENCODING METHOD OF MEMBERS RELATED BY MULTIPLE CONCEPT OR GROUP HIERARCHIES AND IDENTIFICATION OF MEMBERS IN A CORPPUS OF A DATABASE THAT ARE DESCENDANTS OF ONE OR MORE SELECTED CONCEPTS OF GROUPS FROM THE ENCODING
5,926,820	February 27, 1997	METHOD AND SYSTEM FOR

		PERFORMING RANGE MAX/MIN QUERIES ON A DATA CUBE
5,926,818	June 30, 1997	RELATIONAL DATABASE IMPLEMENTATION OF A MULTI-DIMENSIONAL DATABASE
5,918,232	November 26, 1997	MULTIDIMENSIONAL DOMAIN MODELING METHOD AND SYSTEM
5,918,225	June 29, 1999	SOL-BASED DATABASE SYSTEM WITH IMPROVED INDEXING METHODOLOGY
5,915,257	December 24, 1996	CROSS TAB ANALYSIS AND REPORTING METHOD
5,905,985	June 30, 1997	RELATIONAL DATABASE MODIFICATIONS BASED ON MULTI- DIMENSIONAL DATABASE MODIFICATIONS
5,901,287	July 24, 1996	INFORMATION AGGREGATION AND SYNTHESIZATION SYSTEM
5,890,151	May 9, 1997	METHOD AND SYSTEM FOR PERFORMING PARTIAL-SUM QUERIES ON A DATA CUBE
5,864,857	March 27, 1997	METHOD FOR PROCESSING MULTI- DIMENSIONAL DATA
5,857,184	May 3, 1996	LANGUAGE AND METHOD FOR CREATING, ORGANIZING, AND RETRIEVING DATA FROM A DATABASE
5,852,821	June 25, 1997	HIGH-SPEED DATA BASE QUERY METHOD AND APPARATUS
5,850,547	January 8, 1997	METHOD AND APPARATUS FOR PARALLEL PROCESSING AGGREGATES USING INTERMEDIATE AGGREGATE VALUES
5,832,475	March 29, 1996	DATABASE SYSTEM AND METHOD EMPLOYING DATA CUBE OPERATOR



		FOR GROUP-BY OPERATIONS
5,822,751	December 16, 1996	EFFICIENT MULTIDIMENSIONAL DATA AGGREGATION OPERATOR IMPLEMENTATION
5,805,885	January 24, 1994	METHOD AND SYSTEM FOR AGGREGATING OBJECTS
5,799,300	December 12, 1996	METHOD AND SYSTEM FOR PERFORMING RANGE-SUM QUERIES ON A DATA CUBE
5,794,229	December 11, 1995	DATABASE SYSTEM WITH METHODOLOGY FOR STORING A DATABASE TABLE BY VERTICALLY PARTITIONING ALL COLUMNS OF THE TABLE
5,794,228	December 11, 1995	DATABASE SYSTEM WITH BUFFER MANAGER PROVIDING PER PAGE NATIVE DATA COMPRESSION AND DECOMPRESSION
5,794,246	April 30, 1997	METHOD FOR INCREMENTAL AGGREGATION OF DYNAMICALLY INCREASING DATABASE DATA SETS
5,781,896	April 23, 1996	METHOD AND SYSTEM FOR EFFICIENTLY PERFORMING DATABASE TABLE AGGREGATION USING AN AGGREGATION INDEX
5,765,028	May 7, 1996	METHOD AND APPARATUS FOR PROVIDING NEURAL INTELLIGENCE TO A MAIL QUERY AGENT IN AN ONLINE ANALYTICAL PROCESSING SYSTEM
5,745,764	June 7, 1995	METHOD AND SYSTEM FOR AGGREGATING OBJECTS
5,706,495	May 7, 1996	ENCODED-VECTOR INDICES FOR DECISION SUPPORT AND WAREHOUSING
5,379,419	December 7, 1990	METHODS AND APPARATUS FOR

		ACCESSING NON-RELATIONAL DATA FILES USING RELATIONAL QUERIES
5,361,385	August 26, 1992	PARALLEL COMPUTING SYSTEM FOR VOLUMETRIC MODELING, DATA PROCESSING AND VISUALIZATION
5,359,724	March 30, 1992	METHOD AND APPARATUS FOR STORING AND RETRIEVING MULTI-DIMENSIONAL DATA IN COMPUTER MEMORY
5,278,966	June 29, 1990	TOROIDAL COMPUTER MEMORY FOR SERIAL AND PARALLEL PROCESSORS
5,257,365	March 16, 1990	DATABASE SYSTEM WITH MULTI-DIMENSIONAL SUMMARY SEARCH TREE NODES FOR REDUCING THE NECESSITY TO ACCESS RECORDS
5,189,608	February 15, 1990	METHOD AND APPARATUS FOR STORING AND GENERATING FINANCIAL INFORMATION EMPLOYING USER SPECIFIED INPUT AND OUTPUT FORMATS
5,101,475	April 17, 1989	METHOD AND APPARATUS FOR GENERATING ARBITRARY PROJECTIONS OF THREE-DIMENSIONAL VOXEL-BASED DATA
4,989,141	June 1, 1987	COMPUTER SYSTEM FOR FINANCIAL ANALYSES AND REPORTING
4,987,554	August 24, 1988	METHOD OF CONVERTING CONTINUOUS THREE-DIMENSIONAL GEOMETRICAL REPRESENTATIONS OF POLYGONAL OBJECTS INTO DISCRETE THREE-DIMENSIONAL VOXEL-BASED REPRESENTATIONS THEREOF WITHIN A THREE-DIMENSIONAL VOXEL-BASED SYSTEM
2002/0016924	April 27, 2001	DATABASE SECURITY
2002/0023122	April 27, 2001	METHOD AND APPARATUS FOR PROCESSING JOBS ON AN

## ENTERPRISE-WIDE COMPUTER SYSTEM

2002/0029207	February 28, 2001	DATA AGGREGATION SERVER FOR MANAGING A MULTI-DIMENSIONAL DATABASE AND DATABASE MANAGEMENT SYSTEM HAVING DATA AGGREGATION SERVER INTEGRATED THEREIN
2002/0038229	April 27, 2001	NON-ADDITIVE MEASURES AND METRIC CALCULATION
2002/0038297	April 27, 2001	ALLOCATION MEASURES AND METRIC CALCULATION
2002/0099692	April 27, 2001	AGGREGATE NAVIGATION SYSTEM

## FOREIGN PUBLICATIONS

<u>NUMBER</u>	<u>PUBLICATION DATE</u>	<u>TITLE</u>
WO 98/49636	November 5, 1998	A METHOD FOR INCREMENTAL AGGREGATION OF DYNAMICALLY INCREASING DATABASE DATA SETS

## TECHNICAL PUBLICATIONS

LI, C. et al., "A Data Model for Supporting On-Line Analytical Processing," Presented at the International Conference on Information and Knowledge Management, 1996, pages 81-88.

ALBRECHT, J. et al., "Aggregate-Based Query Processing in a Parallel Data Warehouse Server," Proceedings of the Tenth International Workshop on Database and Expert Systems Applications, September 1-3, 1999, pages 40-44.

POURABBAS, E. et al., "Characterization of Hierarchies and Some Operators in OLAP Environment," Presented at the ACM 2<sup>nd</sup> International Workshop on Data Warehousing and OLAP, November 2-6, 1999, pages 1-17.

WIDMANN, N. et al., "Efficient Execution of Operations in a DBMS for Multidimensional Arrays," Presented at the ACM SIGMOD 1998, pages 1-11, <http://dblp.uni->

[trier.de/db/conf/ssdbm/WidmannB98.html](http://trier.de/db/conf/ssdbm/WidmannB98.html).

KORN, F. et al., "Efficiently Supporting Ad Hoc Queries in Large Datasets of Time Sequences," Presented at ACM SIGMOD International Conference on Management of Data, May 11-15, 1997, pages 1-22, <http://www.acm.org/pubs/citations/proceedings/mod/253260.p289-korn/>.

PEDERSEN, T.B., Aspects of Data Modeling and Query Processing for Complex Multidimensional Data, 2000, pages 1-180, Danish Academy of Technical Sciences.

POURABBAS, E. et al., "Hierarchies and Relative Operators in the OLAP Environment," SIGMOD Record, March 2000, pages 1-8, Vol. 29, No. 1, <http://dblp.uni-trier.de/db/journals/sigmod/sigmod29.html>.

SALEM, K. et al., "How to Roll a Join: Asynchronous Incremental View Maintenance," Presented at ACM SIGMOD on Management of Data and Symposium on Principles of Database Systems, May 15-18, 2000, pages 1-13, <http://www.acm.org/pubs/citations/proceedings/mod/342009/p129-salem/#abstract>.

HARINARAYAN, V. et al., "Implementing Data Cubes Efficiently," Presented at the ACM SIGMOD International Conference on Management of Data, June 4-6, 1996, pages 205-216.

AGRAWAL, R. et al., "Modeling Multidimensional Databases," IBM Almaden Research Center, 1995; Presented at the 13<sup>th</sup> International Conference on Data Engineering April 1997, pages 1-23.

AGARWAL, S. et al., "On the Computation of Multidimensional Aggregates," Presented at the 22<sup>nd</sup> VLDB Conference, 1996, pages 1-16.

HELLERSTEIN, J.M. et al., "Online Aggregation," Presented at the ACM SIGMOD International Conference on Management of Data, May 1997, Tucson, Arizona, pages 1-12, <http://www.acm.org/pubs/citations/proceedings/mod/253260/p171-hellerstein/>.

ELKINS, S.B., "Open OLAP," DBMS, April 1998, pages 1-7, <http://www.dbmsmag.com/9804d14.html>.

LI, C. et al., "Optimizing Statistical Queries by Exploiting Orthogonality and Interval Properties of Grouping Relations," Presented at the 8<sup>th</sup> International Conference on Scientific & Statistical Database Management, pages 1-10, June 1996.

HO, C. et al., "Range Queries in OLAP Data Cubes," Presented at the ACM SIGMOD International Conference on Management of Data, May 11-15, 1997, pages 1-16, <http://www.acm.org/pubs/citations/proceedings/mod/253260/p73-ho/>.

"See Data from All Angles with Multidimensional Database Software" SAS Institute Inc., 2001, 1 page, [www.sas.com/products/mddb/index.html](http://www.sas.com/products/mddb/index.html).

CHEUNG, D.W. et al., "Towards the Building of a Dense-Region-Based OLAP System," Data and Knowledge Engineering, 2001, pages 1-27, Vol. 36, No. 1, <http://www.elsevier.nl/gej->

ng/10/16/74/62/24/24/abstract.html.

McKIE, S., "Essbase 4.0," DBMS Online, July 1996, pages 1-4, <http://www.dbmsmag.com/9607d13.html>.

HELLERSTEIN, J.M., "Optimization Techniques for Queries with Expensive Methods," ACM Transactions on Database Systems (TODS), 1998, pages 113-157, Vol. 23, No. 2.

COLLIAT, G., "OLAP, Relational, and Multidimensional Database Systems," SIGMOD Record, September 1996, pp. 64-69, Vol. 25, No. 3.

KIMBALL, R., "The Aggregate Navigator; How to Optimize Your Data Warehouse Using Aggregates Without Driving Your End Users Crazy," DBMS, November 1995, [www.dbmsmag.com](http://www.dbmsmag.com).

PENDSE, N., "The Origins of Today's OLAP Products," February 6, 2003, pages 1-7, <http://www.olapreport.com/origins.htm>.

"Introduction To Structured Query Language," 2000, pages 1-33, <http://w3.one.net/~about.jhoffmann/sqltut.htm>.

DATE, C.J., "An Introduction to Database Systems," 2000, pages 250, 266, 289-326, Addison-Wesley, Seventh Edition.

"The Art of Indexing," A White Paper by DISC, October 1999, pages 3-30, Dynamic Information Systems Corporation,.

HARRINGTON, J.L., "Relational Database Design Clearly Explained," 1998, pages v-xiii, 1-62, Morgan Kaufman.

KIMBALL, R., "Aggregate Navigation With (Almost) No MetaData," 1996, pages 1-8, <http://www.dbmsmag.com/9608d54.html>.

DUHL, J. et al., "A Performance Comparison of Object and Relational Databases Using the Sun Benchmark," Proceedings of the Conference on Object Oriented Programming Systems Languages and Applications, September 25-30, 1988, pages 153-163.

GUPTA, H. V., et al., "Index Selection for OLAP", Proceedings of the 13th Int'l Conference on Data Engineering, April 7-11, 1997, pages 208-219.

CHAUDHURI, S. et al., "An Overview of Data Warehousing and OLAP Technology", SIGMOD Record, New York, NY March 1997, Vol. 26, No. 1.

COLBY, L.S. et al. "Red Brick Vista: Aggregate Computation and Myanagement", Data Engineering 1998 Proceedings, 14th Int'l Conference in Orlando, Fl., Feb. 23-27 1998.

ALBRECHT, J. et al. "Management of Multidimensional Aggregates for Efficient Online

Analytical Processing," Database Engineering and Applications, 1999, Int'l Symposium Proceedings Montreal, Quebec, Canada.

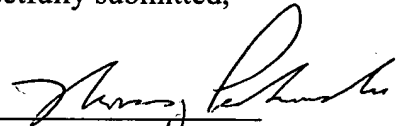
ZHAO, Y et al. "Array-Based Evaluation of Multi-Dimensional Queries in Object-Relational Database Systems," Data Engineering, 1998 Proceedings, 14th Int'l Conference in Orlando, FL., Feb. 23-27 1998.

"Performance Management - Product Information," ENT, July 17, 1999, 2 pages.

A separate listing of the above references on PTO Form 1449, hard copies of non-patent references, and a compact disc containing copies of U.S. references in .pdf format are enclosed herewith for the convenience of the Examiner.

Applicants believe that no fees are due at this time. However, if the Commissioner deems it necessary, he is hereby authorized to charge any fee deficiencies or overpayments to Deposit Account No. 16-1340.

Respectfully submitted,



Dated: July 21, 2005

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CERTIFICATE OF MAILING UNDER  
37 C.F.R. 1.08

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Commissioner for Patents  
P.O. Box 1450

A handwritten signature in cursive script, appearing to read "Thomas J. Perkowski".

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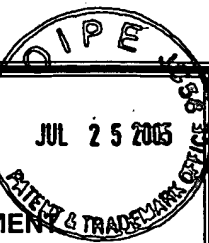
Thomas J. Perkowski, Esq.

Reg. No. 33,134  
Date: July 21, 2005

Substitute for form 1449A/PTO

**INFORMATION  
DISCLOSURE STATEMENT  
BY APPLICANTS**

JUL 25 2005



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**Complete If Known**

Application Number	10/849,501
Filing Date	May 19, 2004
First Name Inventor	Bakalash et al.
Group Art Unit	2177
Examiner Name	n/a
Attorney Docket Number	122-007USANL0

**U.S. PATENT DOCUMENTS**

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		6,832,263		Polizzi et al.	12/14/2004	G06F 15/16
		6,766,325		Pasumansky et al.	07/20/2004	G06F 17/30
		6,763,357		Deshpande et al.	07/13/2004	G06F 17/30
		6,748,394		Shah et al.	06/08/2004	G06F 17/30
		6,732,115		Shah et al.	05/04/2004	G06F 17/30
		6,662,174		Shah et al.	12/09/2003	G06F 17/30
		6,643,661		Polizzi et al.	11/04/2003	G06F 17/30
		6,629,094		Colby	09/30/2003	G06F 17/30
		6,601,062		Deshpande	07/29/2003	G06F 17/30
		6,594,672		Lampson et al.	07/15/2003	G06F 17/30
		6,587,547		Zirngibl et al.	07/01/2003	H04M 1/64; G06F 15/16



### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		6,549,907		Fayyad et al.	04/15/2003	G06F 17/30
		6,535,872		Castelli et al.	03/18/872	G06F 17/30
		6,493,728		Berger	12/10/2002	G06F 17/30
		6,484,179		Roccaforte	11/19/2002	G06F 17/30
		6,477,536		Pasumansky et al.	11/05/2002	G06F 17/30
		6,473,764		Petculescu et al.	10/29/2002	G06F 17/30
		6,434,544		Bakalash et al.	08/13/2002	G06F 17/30
		6,408,292		Bakalash et al.	06/18/2002	G06F 17/30
		6,405,208		Raghavan et al.	06/11/2002	G06F 17/30
		6,397,195		Pinard et al.	05/28/2002	G06F 17/60
		6,385,604		Bakalash et al.	05/07/2002	G06F 17/30
		6,385,301		Nolting et al.	05/07/2002	H04M 1/24; H04M 15/00
		6,374,234		Netz	04/16/2002	G06F 17/30

### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		6,330,564		Hellerstein et al.	12/11/2001	G06F 17/00; G06F 7/00
		6,324,533		Agrawal et al.	11/27/2001	G06F 17/30; G06F 7/00
		6,321,241		Gartung et al.	11/20/2001	G06F 17/30; G06F 7/00 G06T 11/20
		6,317,750		Tortolani et al.	11/13/2001	G06F 17/00
		6,269,393		Yost et al.	07/31/2001	G06F 15/16
		6,249,791		Osborn et al.	06/19/2001	G06F 17/30
		6,212,617		Hardwick	04/03/2001	G06F 9/54
		6,212,515		Rogers	04/03/2001	G06F 17/30
		6,212,524 B1		Weissman et al.	04/03/2001	G06F 17/30
		6,209,036		Aldred et al.	03/27/2001	G06F 15/16
		6,208,975 B1		Bull et al.	03/27/2001	G06F 17/60
		6,205,447		Malloy	03/20/2001	G06F 17/30
		6,189,004 B1		Rassen et al.	02/13/2001	G06F 17/30

### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		6,182,061 B1		Matsuzawa et al.	01/30/2001	G06F 17/30
		6,182,060		Hedgcock et al.	01/30/2001	G06F 17/30
		6,173,310 B1		Yost et al.	01/09/2001	G06F 15/16
		6,163,774		Lore et al.	12/19/2000	G06F 17/30
		6,161,103		Rauer et al.	12/12/2000	G06F 17/30
		6,151,601		Papierniak et al.	11/21/2000	G06F 17/30
		6,141,655		Johnson et al.	10/31/2000	G06F 17/30
		6,134,541		Castelli et al.	10/17/2000	G06F 17/30
		6,122,628		Castelli et al.	09/19/2000	G06F 17/30
		6,115,705		Larson	09/05/2000	G06F 17/30
		6,108,647		Poosala et al.	08/22/2000	G06F 17/30
		6,064,499		Dalal	05/16/2000	G06F 17/30
		6,034,697		Becker	03/07/2000	G06F 15/00

### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		6,023,695		Osborn et al.	02/08/2000	G06F 17/30
		6,006,216		Griffin et al.	12/21/1999	G06F 17/30
		6,003,029		Agrawal et al.	12/14/1999	08/916,347
		5,999,192		Selfridge et al.	12/07/1999	G06F 15/00
		5,991,754		Raitto et al.	11/23/1999	G06F 17/30
		5,987,467		Ross et al.	11/16/1999	G06F 17/30
		5,978,796		Malloy et al.	11/02/1999	G06F 17/30
		5,978,788		Castelli et al.	11/02/1999	G06F 17/30
		5,963,936		Cochrane et al.	10/05/1999	G06F 17/30
		5,940,822		Haderie et al.	08/17/1999	G06F 17/30
		5,926,820		Agrawal et al.	07/20/1999	G06F 17/30
		5,926,818		Malloy	07/20/1999	G06F 17/30
		5,918,232		Pouschine et al.	06/29/1999	G06F 17/30

### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		5,918,225		White et al.	06/29/1999	G06F 17/30
		5,915,257		Gartung et al.	06/22/1999	G06F 17/30
		5,905,985		Malloy et al.	05/18/1999	G06F 17/30
		5,901,287		Bull	05/04/1999	H04L 12/66
		5,890,151		Agrawal et al.	03/30/1999	G06F 17/30
		5,864,857		Ohata et al.	01/26/1999	G06F 17/30
		5,857,184		Lynch	01/05/1999	G06F 17/30
		5,852,821		Chen et al.	12/22/1998	G06F 17/30
		5,850,547		Waddington et al.	12/15/1998	G06F 9/40
		5,832,475		Agrawal et al.	11/03/1998	G06F 17/30
		5,822,751		Gray et al.	10/13/1998	G06F 17/30
		5,805,885		Leach et al.	09/08/1998	G06F 15/163
		5,799,300		Ragrawal et al.	08/25/1998	G06F 17/30

### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		5,794,229		French et al.	08/11/1998	G06F 17/30
		5,794,228		French et al.	08/11/1998	G06F 17/30
		5,794,246		Sankaran et al.	08/11/1998	G06F 15/00
		5,781,896		Ketan Dalal	07/14/1998	G06F 17/20
		5,765,028		Gladden	06/09/1998	G06F 15/16
		5,745,764		Leach et al.	04/28/1998	G06F 15/163; G06F 9/00
		5,706,495		Chadha et al.	01/06/1998	G06F 17/30
		5,379,419		Heffernan et al.	01/03/1995	G06F 15/40
		5,361,385		Bakalash	11/01/1994	G06F 15/72
		5,359,724		Earle	10/25/1994	G06F 12/02
		5,278,966		Parks et al.	01/11/1994	G06F 12/02
		5,257,365		Powers et al.	10/26/1993	G06F 15/40
		5,189,608		Lyons et al.	02/23/1993	G06F 15/21

### U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		5,101,475		Kaufman et al.	03/31/1991	G06F 15/62
		4,989,141		Lyons et al.	01/29/1991	G06F 15/30
		4,987,554		Kaufman	01/22/1991	G06F 15/40
		2002/0016924		Shah et al.	02/07/2002	G06F 12/14; G06F 17/30
		2002/0023122		Polizzi et al.	02/21/2002	G06F 15/16
		2002/0029207		Bakalash et al.	03/07/2002	G06F 7/00
		2002/0038229		Shah et al.	03/28/2002	G06F 17/60; G06F 7/00
		2002/0038297		Shah et al.	03/28/2002	G06F 17/30; G06F 7/00
		2002/0099692		Shah et al.	07/25/2002	G06F 7/00

# PUBLICATIONS

Examiner Initials	Cite No.	Description
		LI, C. et al., "A Data Model for Supporting On-Line Analytical Processing," Presented at the International Conference on Information and Knowledge Management, 1996, pages 81-88.
		ALBRECHT, J. et al., "Aggregate-Based Query Processing in a Parallel Data Warehouse Server," Proceedings of the Tenth International Workshop on Database and Expert Systems Applications, September 1-3, 1999, pages 40-44.
		POURABBAS, E. et al., "Characterization of Hierarchies and Some Operators in OLAP Environment," Presented at the ACM 2 <sup>nd</sup> International Workshop on Data Warehousing and OLAP, November 2-6, 1999, pages 1-17.
		WIDMANN, N. et al., "Efficient Execution of Operations in a DBMS for Multidimensional Arrays," Presented at the ACM SIGMOD 1998, pages 1-11, <a href="http://dblp.uni-trier.de/db/conf/ssdbm/WidmannB98.html">http://dblp.uni-trier.de/db/conf/ssdbm/WidmannB98.html</a> .
		KORN, F. et al., "Efficiently Supporting Ad Hoc Queries in Large Datasets of Time Sequences," Presented at ACM SIGMOD International Conference on Management of Data, May 11-15, 1997, pages 1-22, <a href="http://www.acm.org/pubs/citations/proceedings/mod/253260.p289-korn/">http://www.acm.org/pubs/citations/proceedings/mod/253260.p289-korn/</a> .
		PEDERSEN, T.B., Aspects of Data Modeling and Query Processing for Complex Multidimensional Data, 2000, pages 1-180, Danish Academy of Technical Sciences.
		POURABBAS, E. et al., "Hierarchies and Relative Operators in the OLAP Environment," SIGMOD Record, March 2000, pages 1-8, Vol. 29, No. 1, <a href="http://dblp.uni-trier.de/db/journals/sigmod/sigmod29.html">http://dblp.uni-trier.de/db/journals/sigmod/sigmod29.html</a> .
		SALEM, K. et al., "How to Roll a Join: Asynchronous Incremental View Maintenance," Presented at ACM SIGMOD on Management of Data and Symposium on Principles of Database Systems, May 15-18, 2000, pages 1-13, <a href="http://www.acm.org/pubs/citations/proceedings/mod/342009/p129-salem/#abstract">http://www.acm.org/pubs/citations/proceedings/mod/342009/p129-salem/#abstract</a> .
		HARINARAYAN, V. et al., "Implementing Data Cubes Efficiently," Presented at the ACM SIGMOD International Conference on Management of Data, June 4-6, 1996, pages 205-216.
		AGRAWAL, R. et al., "Modeling Multidimensional Databases," IBM Almaden Research Center, 1995; Presented at the 13 <sup>th</sup> International Conference on Data Engineering April 1997, pages 1-23.
		AGARWAL, S. et al., "On the Computation of Multidimensional Aggregates," Presented at the 22 <sup>nd</sup> VLDB Conference, 1996, pages 1-16.
		HELLERSTEIN, J.M. et al., "Online Aggregation," Presented at the ACM SIGMOD International Conference on Management of Data, May 1997, Tucson, Arizona, pages 1-12, <a href="http://www.acm.org/pubs/citations/proceedings/mod/253260/p171-hellerstein/">http://www.acm.org/pubs/citations/proceedings/mod/253260/p171-hellerstein/</a> .
		ELKINS, S.B., "Open OLAP," DBMS, April 1998, pages 1-7, <a href="http://www.dbmsmag.com/9804d14.html">http://www.dbmsmag.com/9804d14.html</a> .



## PUBLICATIONS

Examiner Initials	Cite No.	Description
		LI, C. et al., "Optimizing Statistical Queries by Exploiting Orthogonality and Interval Properties of Grouping Relations," Presented at the 8 <sup>th</sup> International Conference on Scientific & Statistical Database Management, pages 1-10, June 1996.
		HO, C. et al., "Range Queries in OLAP Data Cubes," Presented at the ACM SIGMOD International Conference on Management of Data, May 11-15, 1997, pages 1-16, <a href="http://www.acm.org/pubs/citations/proceedings/mod/253260/p73-ho/">http://www.acm.org/pubs/citations/proceedings/mod/253260/p73-ho/</a> .
		"See Data from All Angles with Multidimensional Database Software" SAS Institute Inc., 2001, 1 page, <a href="http://www.sas.com/products/mddb/index.html">www.sas.com/products/mddb/index.html</a> .
		CHEUNG, D.W. et al., "Towards the Building of a Dense-Region-Based OLAP System," Data and Knowledge Engineering, 2001, pages 1-27, Vol. 36, No. 1, <a href="http://www.elsevier.nl/gej-ng/10/16/74/62/24/24/abstract.html">http://www.elsevier.nl/gej-ng/10/16/74/62/24/24/abstract.html</a> .
		McKIE, S., "Essbase 4.0," DBMS Online, July 1996, pages 1-4, <a href="http://www.dbmsmag.com/9607d13.html">http://www.dbmsmag.com/9607d13.html</a> .
		HELLERSTEIN, J.M., "Optimization Techniques for Queries with Expensive Methods," ACM Transactions on Database Systems (TODS), 1998, pages 113-157, Vol. 23, No. 2.
		COLLIAT, G., "OLAP, Relational, and Multidimensional Database Systems," SIGMOD Record, September 1996, pp. 64-69, Vol. 25, No. 3.
		KIMBALL, R., "The Aggregate Navigator; How to Optimize Your Data Warehouse Using Aggregates Without Driving Your End Users Crazy," DBMS, November 1995, <a href="http://www.dbmsmag.com">www.dbmsmag.com</a> .
		PENDSE, N., "The Origins of Today's OLAP Products," February 6, 2003, pages 1-7, <a href="http://www.olapreport.com/origins.htm">http://www.olapreport.com/origins.htm</a> .
		"Introduction To Structured Query Language," 2000, pages 1-33, <a href="http://w3.one.net/~about.jhoffmann/sqltut.htm">http://w3.one.net/~about.jhoffmann/sqltut.htm</a> .
		DATE, C.J., "An Introduction to Database Systems," 2000, pages 250, 266, 289-326, Addison-Wesley, Seventh Edition.
		"The Art of Indexing," A White Paper by DISC, October 1999, pages 3-30, Dynamic Information Systems Corporation,.
		HARRINGTON, J.L., "Relational Database Design Clearly Explained," 1998, pages v-xiii, 1-62, Morgan Kaufman.

# PUBLICATIONS

Examiner Initials	Cite No.	Description
		KIMBALL, R., "Aggregate Navigation With (Almost) No MetaData," 1996, pages 1-8, <a href="http://www.dbmsmag.com/9608d54.html">http://www.dbmsmag.com/9608d54.html</a> .
		DUHL, J. et al., "A Performance Comparison of Object and Relational Databases Using the Sun Benchmark," Proceedings of the Conference on Object Oriented Programming Systems Languages and Applications, September 25-30, 1988, pages 153-163.
		GUPTA, H. V., et al., "Index Selection for OLAP", Proceedings of the 13th Int'l Conference on Data Engineering, April 7-11, 1997, pages 208-219.
		CHAUDHURI, S. et al., "An Overview of Data Warehousing and OLAP Technology", SIGMOD Record, New York, NY March 1997, Vol. 26, No. 1.
		COLBY, L.S. et al. "Red Brick Vista: Aggregate Computation and Myanagement", Data Engineering 1998 Proceedings, 14th Int'l Conference in Orlando, Fl., Feb. 23-27 1998.
		ALBRECHT, J. et al. "Management of Multidimensional Aggregates for Efficient Online Analytical Processing," Database Engineering and Applications, 1999, Int'l Symposium Proceedings Montreal, Quebec, Canada.
		ZHAO, Y et al. "Array-Based Evaluation of Multi-Dimensional Queries in Object-Relational Database Systems," Data Engineering, 1998 Proceedings, 14th Int'l Conference in Orlando, Fl., Feb. 23-27 1998.
		"Performance Management - Product Information," ENT, July 17, 1999, 2 pages.

FOREIGN PATENT DOCUMENTS								
Examiner Initials		Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class	T *
		Numbe r	Kind Code (if known)					
		PCT	WO 98/49636		Informatica Corporation et al.	11/05/1998		

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